

under Lieutenant F. T. Bryan to survey a route for a wagon road from Fort Riley, Kansas, to Bridger's Pass, Wyoming, and this expedition was accompanied by Mr. Wm. S. Wood of Philadelphia, who made large collections of birds, not only in the vicinity of Fort Riley, from June 13 to 20, but along the route through Kansas, Nebraska, Wyoming, and Colorado, until late in October of that year. The following year Mr. Wood again collected birds around St. Louis from May 6 to 15 and around Fort Riley until the departure of the party, about June 12, these being supplemented by further collecting in Nebraska and Wyoming until early September of 1857. But yet more important, from the local standpoint, were the collections of Dr. J. G. Cooper, who in 1857 collected birds at Independence, Missouri, and vicinity, from May 26 to July 1, at Shawnee Mission, Kansas, on July 3 and 4, and at Fort Leavenworth on July 12 and 13, as a member of the W. M. Magraw party.

During the 70's ornithologists working in this region included the late Dr. J. A. Allen, who during the first ten days of May, 1871, collected birds at Fort Leavenworth and vicinity, and W. E. D. Scott who observed and collected birds in the adjacent county to this one, Johnson County, in the spring of 1874. With the appearance of Coues' "Birds of the Northwest", in 1874, the pioneer period in Missouri River ornithology may be fittingly considered as having been brought to a close.

We assemble today, therefore, on grounds that were not unfamiliar to many of the great ornithologists of the nineteenth century, and it is fitting that we should realize this fact as we meet to carry forward the standard of ornithological progress that they have dropped.

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IN SEARCH OF NEW COLONIES OF KIRTLAND WARBLERS

BY NORMAN A. WOOD

Early in the morning of June 12, 1925, the writer in company with Mr. Walter Hastings, Custodian of Oology in the Museum of Zoology, started from Ann Arbor for north central Michigan in an automobile loaded with tents, air mattress, blankets and three cameras. The object of the trip was to find nests of Kirtland Warblers (*Dendroica kirtlandi*) in order to study and photograph the birds at home.

Our first stop was in Clare County, where we hoped to locate the colonies found by the late Dr. W. B. Barrows. We drove for an entire day but found no Kirtland Warblers. We were told that large tracts

of small jack pine in the northwest corner of the county had been destroyed by fire. These areas were, no doubt, the sites of the colonies Barrows found.

We then drove into Roscommon County where we found a small colony and heard the males singing by the side of the road. We spent some time there but soon found the birds were not yet nesting and were scattered all over the tract of jack pines.

From here we drove north and east into Oscoda County where we located several colonies. One of these was the largest we had ever seen, and was possibly the largest in the state. We estimated that it occupied an area over a mile square or more than 1,000 acres. Here we found the conditions ideal for the species, with jack pines from three to ten feet high, in places very thick, in others more open. The birds were flying about, singing and mating and we soon decided we were too early for the nests.

Leaving this colony we drove west into Crawford County where in one day we found several colonies, some of them many miles apart. We stopped at the site of one colony where Mr. and Mrs. Hastings had camped in June, 1924. They had heard the birds singing all about the camp in early morning and counted eight or ten in sight or hearing at one time. Here Mr. Hastings had been able to get good photographs of several birds which acted as though the nests were close at hand, although none were found. We also found a few of the birds but they were rather shy and we decided that on account of the cold late Spring they had not yet nested. We found here a nest and young of the Slate-colored Junco which Mr. Hastings photographed.

Another day we drove over the jack pine plains of Crawford County and found the species quite common in nearly all suitable habitats. We also found large tracts that had burned over. Fire is without doubt the greatest menace to the Kirtland Warbler colonies, since it destroys the habitat as well as the nests of the birds. Mr. Babbit, the Fire Warden at Grayling, told us that fire had run over about 70,000 acres in Crawford and Oscoda Counties early in 1925. This was no doubt before the warblers arrived. The Cowbird probably destroys large numbers of eggs—but is not so serious a problem for the warbler as fire.

We spent seven days driving over the plains, in all about 700 miles, and located many colonies of the species. It is difficult to locate the boundaries of some of these as they merge into one another. Some of these colonies are on open, burned over plains while others are in thicker growths but all are in burned over areas. There is no limit

to the suitable habitats at present, although in the future when the jack pines are older, they may become limited as the ground cover which is essential to the nesting of the species is destroyed by the shade and the needles of the older jack pines. Then too, the lower limbs die and drop off, as the pines mature, and this species is a lover of thick low branches.

The male does not help in the nest building, Mr. Parmelee says, but "just sits around and sings" and after the nest is built and occupied, the male usually sings from some more or less elevated perch near by, while the female is seldom seen above the lower levels of the small jack pine, which furnish them with food and cover. In 1925, however, many of the males were singing low down and some even on the ground.

In conclusion, I wish to correct the type set record that Mr. Edward Arnold claims was taken by him, June 15, 1904. (Bulletin of Mich. Orn. Club, Vol. V, No. 8, pp. 67-68). I collected the type egg on July 11, 1903, with the first nest and its two juvenile birds, all of which are now in the collection of the Museum of Zoology. At my request, Mr. James Parmelee who was with me in 1903, collected a nest and eggs on June 6, 1904, near the site of nest 1, Frazer's, Oscoda County. This set with its nest was sent to the American Museum of New York City by myself and is no doubt now in that collection. These so far as known were the first nests and sets ever taken, but Mr. Parmelee found three other nests all with young at that date.

These are very early dates for young as most of the nests recorded have been later. Mr. Parmelee in his letters to me says that the earliest males arrived at his place on May 3, 1904, and some lingered until September 8. In letters to me Dr. R. A. Brown tells of his visit to Frazer's in June, 1904, and of finding four nests all with young, before June 25. He tells of finding eighteen males in four hours. This is the same colony in which I found the first two nests on July 8-9, 1903. Now the trees are too old and the warblers have gone to other and smaller pines. In June, 1922, this region was worked by Leopold who did not find this species, and who gives the same probable reason. (*Auk*, XLI—1924, Jan. p. 34).

In all the colonies we visited we found about the same number of birds per acre, a conservative estimate of one pair per acre, which for all the known colonies gives us a total of perhaps 5,000 or 6,000 pairs; and there are no doubt many small colonies not yet known.

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